



National results from the analysis on “High-level study of regional dynamics” - Spain

Nicola Asaro, Corporación Tecnológica de Andalucía
Paula Rosa, Corporación Tecnológica de Andalucía

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Article information

Title	National results from the analysis on “High-level study of regional dynamics” - Spain
Authors	Nicola Asaro – Corporación Tecnológica de Andalucía Paula Rosa - Corporación Tecnológica de Andalucía
Brief summary	This article analyses regional dynamics in Andalusia, with a focus on the adoption of bio-based technologies (BBTs) as a driver of sustainability and economic growth. It explores the region’s abundance of biomass resources, its technological advances in bioenergy and bioproducts, and the impact of initiatives funded by operational groups (OGs). It identifies logistical challenges in transportation and storage, while highlighting Andalusia’s potential to lead the green transition and serve as a model for other European regions.
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Andalusia, a dynamic region in southern Spain, provides an exemplary case study in leveraging bio-based technologies (BBTs) to advance sustainability and economic growth. This article examines the region's strengths in biomass availability, its innovative approaches to the bioeconomy, and the challenges faced in logistics and resource management. The analysis of key sectors such as agriculture, forestry and energy production, and the contributions of operational groups (OGs) and funding initiatives, provide a comprehensive understanding of Andalusia's readiness to lead the green transition. The insights presented aim to showcase Andalusia's potential as a benchmark for integrating BBTs into regional economies, in line with broader European sustainability goals.

Andalusia's Regional Dynamics in the Adoption of Bio-Based Technologies (BBTs)

Andalusia, located in southern Spain, is recognized for its rich natural resources and strategic potential in the bioeconomy. With a robust agricultural, forestry, and livestock base, the region is well-positioned to lead the adoption of Bio-Based Technologies (BBTs).



Regional Overview

Andalusia spans 87,268 km² with around 8.5 million residents. Its Mediterranean climate and fertile soils foster a variety of crops, including cereals, olives, almonds, and citrus. Key ecosystems such as the *Dehesa*—a savanna-like landscape supporting sustainable farming—add to its environmental value. Agriculture accounts for 8% of the region's GDP, while forestry enhances both its ecological and economic landscape.

Figure 1: Andalusia location in Europe

Biomass Availability and Logistics

Andalusia produces significant agricultural and agro-industrial biomass. In Figure 2, the distribution of biomass resources is presented, categorized by crop type and province. The data reveals that olive groves account for the largest share, exceeding 2.6 million tonnes and representing 35% of the total. Greenhouse crops follow in significance, contributing 19% to the overall total (Consejería de Agricultura, Pesca, Agua y Desarrollo Rural. Junta de Andalucía, 2023).

However, effective utilization faces challenges in transportation, drying, and storage of biomass. This is mainly due to the high costs involved in the logistics of its supply, where the total impact depends on the type of processing industry and the bioproduct.

Bio-Based Products and Technological Advances

Andalusia has made strides in developing bio-based products, including bioplastics, biocomposites and pellets derived from agricultural and forestry residues. Currently, the most developed and mature sector for bio-products is the bioenergy and biofuels industry, which makes it the first region in Spain

in terms of biomass consumption to generate thermal energy. Moreover, a robust research and development system, led by institutions like IFAPA, drives innovation in the bioeconomy sector.

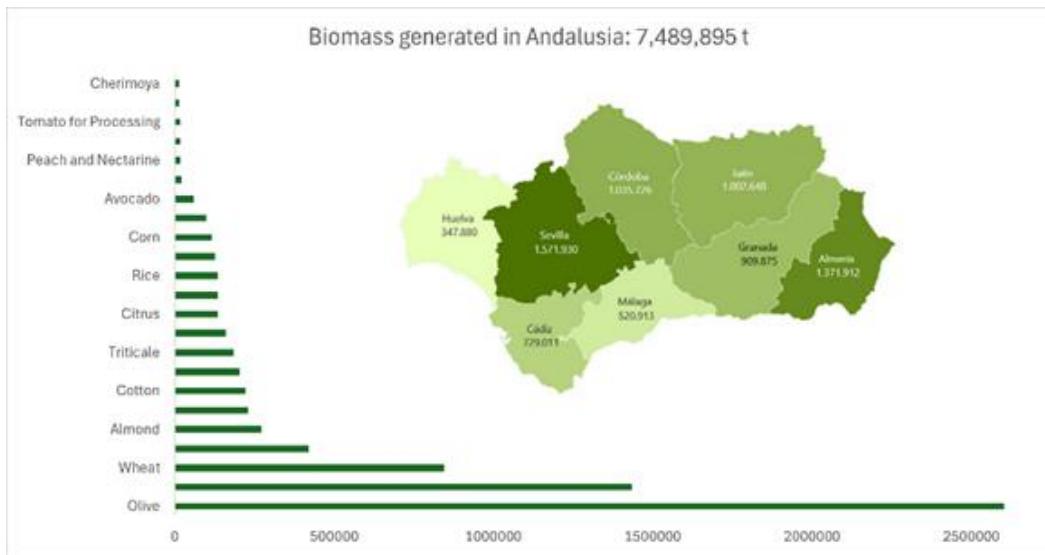


Figure 2: Biomass generated in Andalusia

Operational Groups and Funding

Between 2015 and 2023, Andalusia's Operational Groups (OGs) developed a variety of BBTs, focusing on biomass valorization for bioenergy and bioproducts. These initiatives were funded through programs like the National Recovery, Transformation, and Resilience Plan (PRTR), which supports the region's green transition.

Figure 3 illustrates the distribution of OG projects across various sectors, including agriculture, agro-industry, livestock, forestry, and algae. The total number of OGs for each sector is represented in green, while those focusing on BBT development are shown in brown. The majority of OGs were concentrated in the agriculture sector (64%), followed by agro-industry (16%) and livestock (12%). A smaller portion (6%) of OGs worked on forestry-related projects. A similar distribution is observed for the BBT-focused projects.

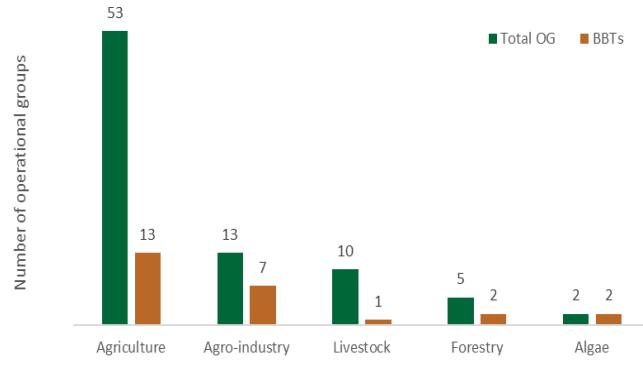


Figure 3: OGs in Andalusia

Conclusion

Andalusia is emerging as a leader in BBT implementation, owing to its abundant biomass resources, strong R&D infrastructure, and financial support mechanisms. To fully realize its potential, the region must address logistical challenges and enhance integration of these technologies into rural economies. By doing so, Andalusia not only strengthens its sustainability but also sets a benchmark for other European regions.



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Document information

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Coordinator Munster Technological University
Ms. Carmen Girón Domínguez
(carmen.dominguez@mtu.ie)

Project overview BBioNets will constitute a thematic network that will rely on, promote, and further advance the work carried out by EIP AGRI Operational Groups (OGs) with respect to **management and/or processing of agricultural and forest biomass with Bio-Based Technologies (BBTs)**. The project will set up 6 regional Forest and Agriculture Networks - FANs (IE, ES, IT, GR, PL, CZ) that will identify local needs, prioritise specific BBTs and share BBT knowledge ready for practice to farmers and foresters, boosting the (re)definition of value chains, stimulating cross-fertilisation beyond borders, and bringing Europe to the forefront of farming, forestry, and bioeconomy with economically viable and sustainable practices.

Consortium



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